



ENVIRONMENTAL
PROTECTION
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August 14, 1996

Mr. Dale Klettke
Alameda County Department of
Environmental Health
UST Local Oversight Program
1131 Harbor Bay Parkway, 2nd Floor
Alameda, CA 94502

STID
3749

Re: **Third Quarter 1996 Monitoring Report**
Former Arco Station Service Station
706 Harrison Street
Oakland, California
STID 3749

Dear Mr. Klettke:

On behalf of Mr. Bo K. Gin, Cambria Environmental Technology, Inc. (Cambria) is submitting this third quarter 1996 ground water monitoring report for the site referenced above. Presented below are the third quarter 1996 activities, the anticipated fourth quarter 1996 activities, and the current hydrocarbon distribution in ground water.

THIRD QUARTER 1996 ACTIVITIES

Quarterly Ground Water Sampling: On July 19, 1996, Cambria gauged and sampled all on site and off site ground water monitoring wells. Although no measurable liquid-phase hydrocarbons (LPH) were detected in any of the wells, a sheen was observed in well MW-1. Table 1 summarizes ground water elevation data and analytic results. Figure 1 presents the ground water elevation contours and benzene concentrations. The analytical results of the ground water sampling are included in Attachment A.

Feasibility Testing: On April 2, 1996, Cambria conducted brief air injection testing of site air sparging (AS) wells SP-3, SP-4 and SP-5. During testing, an applied pressure of 10 pounds per square inch (psi) induced an air flow rate of between 1.0 and 1.5 cubic feet per minute (cfm) in the air sparge wells. An applied pressure of 20 psi induced an air flow rate of 5.0 cfm in each air sparge well. This suggests that a rotary-vane or rotary lobe pump could inject air at low flow rates. A reciprocating or piston air compressor could inject air at higher flow rates to enhance air sparging effectiveness. A summary of test data is presented in Table 2.

Remediation System Design: Cambria submitted a remediation design package detailing soil vapor extraction (SVE) and AS system specifications for the referenced site.

CAMBRIA
ENVIRONMENTAL
TECHNOLOGY, INC.
1144 65TH STREET,
SUITE B
OAKLAND,
CA 94608
Ph: (510) 420-0700
Fax: (510) 420-9170

Mr. Dale Klettke
August 14, 1996

CAMBRIA

ANTICIPATED FOURTH QUARTER 1996 ACTIVITIES

Quarterly Ground Water Sampling: As requested by the Alameda County Department of Environmental Health, Cambria will gauge and collect water samples from each ground water monitoring well. Cambria will measure the thickness of any detected LPH. Cambria will tabulate the data and prepare a quarterly monitoring report.

Remediation System Installation: We understand that Mr. Bo K. Gin will request bids to install a combined SVE and AS system. Upon receiving approval from the state Underground Storage Tank Cleanup Fund, Mr. Bo K. Gin will authorize system installation.

HYDROCARBON DISTRIBUTION IN GROUND WATER

The current hydrocarbon distribution in ground water is consistent with historic site data. The current benzene distribution in ground water is shown in Figure 1. The on site hydrocarbon concentrations in ground water are highest in wells MW-1 and MW-2, which are located down gradient of the former underground storage tank locations. Lower concentrations of hydrocarbons were detected in up gradient well MW-4. No hydrocarbons were detected in on site well MW-4 or in any of the three off site wells located down and cross gradient of the site.

We appreciate the opportunity to provide environmental services on behalf of Mr. Bo K. Gin. Please call if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc.



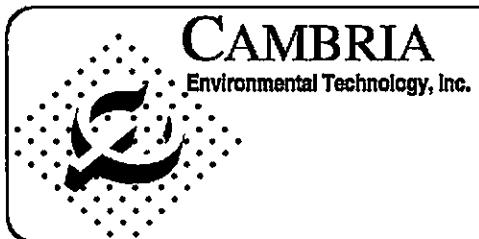
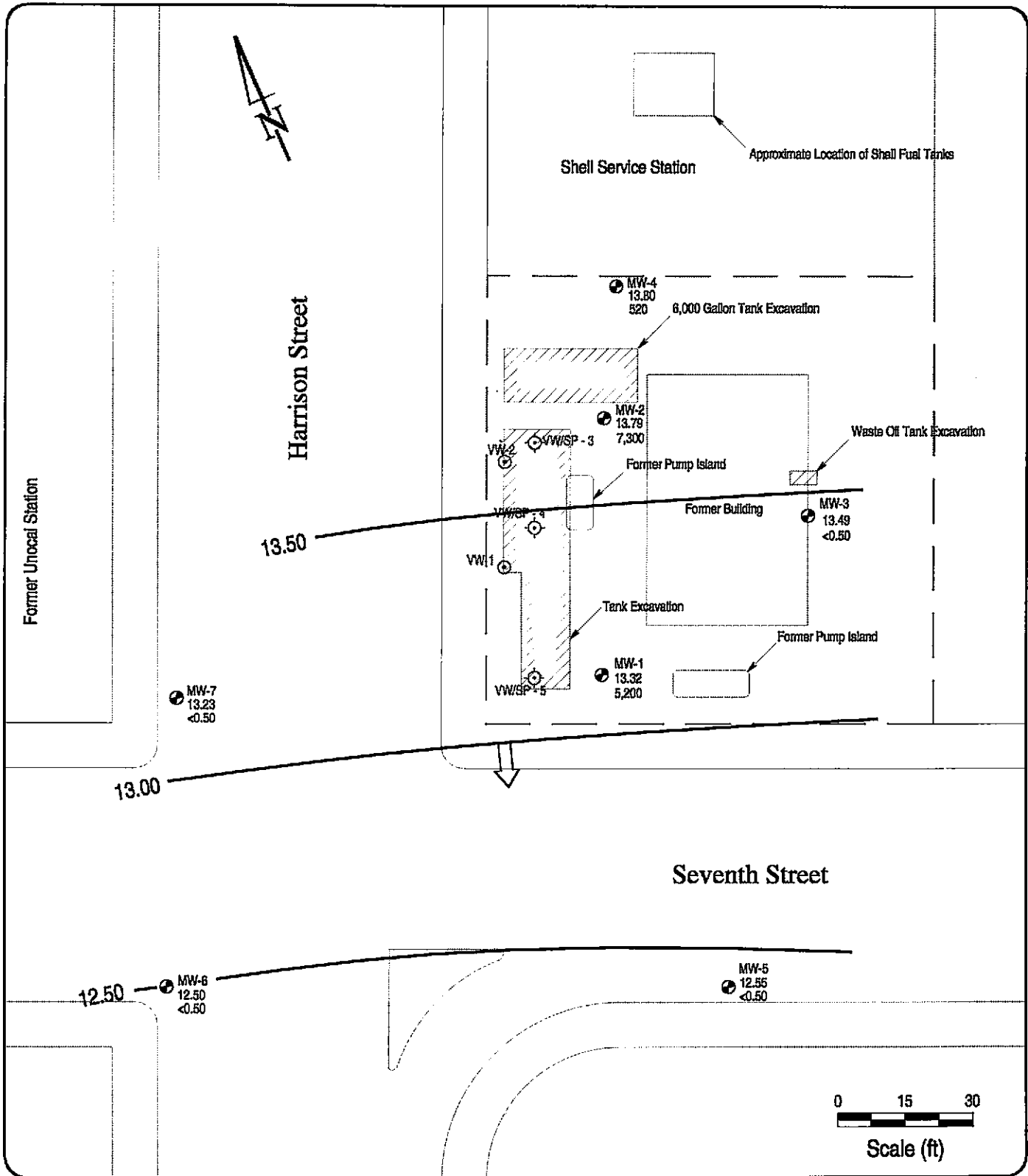
Bob Clark-Riddell, P.E.
Principal Engineer

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Attachments: A - Analytic Results for Ground Water Sampling

cc: Mr. Bo K. Gin, 288 11th Street, Oakland, CA 94706





EXPLANATION	
	Dual Well, SVE/Sparging Well
	SVE Well
	Ground Water Elevation Contour
	Potentiometric Surface Elevation
	Ground Water Flow Direction
	Monitoring Well
	Ground Water Elevation
	Benzene Concentration (ppb)

Ground Water Elevation and Benzene Concentrations
 Former Arco Station
 706 Harrison Street
 Oakland, California
 F:\PROJECT\SB-2004\OAK-116\QM2\Q96.DWG

FIGURE
1

Table 1. Ground Water Analytic Data - Former Arco Station - 706 Harrison Street Oakland, California

Well ID (TOC)	Date Sampled	Depth to Water (ft)	Ground Water Elevation (ft)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	Notes
MW-1 (29.15)	8/13/93	17.40	11.75	20,000	8,500	640	280	440	
	12/14/93	17.27	11.88	17,000	9,200	1,200	4,400	540	
	4/15/94	17.00	12.15	9,500	3,600	530	160	280	
	12/29/94	16.40	12.75	-	-	-	-	-	
	7/19/96	15.83	13.32	17,000	5,200	1,100	350	550	skatol/odor
MW-2 (30.51)	8/13/93	17.05	13.46	34,000	6,800	10,000	740	3,900	
	12/14/93	18.28	12.23	16,000	3,200	4,200	500	1,700	
	4/15/94	18.10	12.41	23,000	2,500	4,200	470	1,800	
	12/29/94	17.40	13.11	-	-	-	-	-	
	7/19/96	16.72	13.79	90,000	7,300	14,000	1,600	7,300	odor
MW-3 (29.77)	8/13/93	17.05	12.72	<50	<0.50	<0.50	<0.50	<1.5	
	12/14/93	17.70	12.07	<50	<0.50	<0.50	<0.50	<1.5	
	4/15/94	17.40	12.37	<50	<0.5	<0.5	<0.5	<0.5	
	12/29/94	16.80	12.97	-	-	-	-	-	
	7/19/96	16.28	13.49	<50	<0.5	<0.5	<0.5	<0.5	
MW-4 (31.18)	12/16/94	18.10	13.08	2,500	32	6.5	4.5	17	
	12.29/94	17.95	13.23	-	-	-	-	-	
	7/19/96	17.38	13.80	3,300	520	39	67	60	
MW-5 (28.04)	12/16/94	16.07	11.97	<50	1.1	<0.5	<0.5	2.4	
	12/29/94	16.10	11.94	-	-	-	-	-	
	7/19/96	15.49	12.53	<50	<0.5	<0.5	<0.5	<0.5	

Table 1. Ground Water Analytic Data - Former Arco Station - 706 Harrison Street Oakland, California

Well ID (TOC)	Date Sampled	Depth to Water (ft)	Ground Water Elevation (ft)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	Notes
MW-6 (29.10)	12/16/94	17.74	11.36	<50	<0.5	<0.5	<0.5	<0.5	
	12/29/94	17.40	11.70	-	-	-	-	-	
	7/19/96	16.60	12.50	<50	<0.5	<0.5	<0.5	<0.5	
MW-7 (29.67)	12/16/94	17.07	12.60	<50	<0.5	<0.5	<0.5	<0.5	
	12/29/94	17.65	12.02	-	-	-	-	-	
	7/19/96	16.44	13.23	<50	<0.5	<0.5	<0.5	<0.5	

Abbreviations

TPHg = Total petroleum hydrocarbons as gasoline parts per billion which is equivalent to ug/l in water
 TOC = Top of casing elevation with respect to mean sea level

Notes

TPHg analyzed by modified EPA Method 8015.
 Benzene, ethylbenzene, toluene and xylenes analyzed by EPA Method 8020.
 Data prior to 12/16/94 provided by previous consultant.

Table 2. Air Sparging Well Performance - Former Arco Station, 706 Harrison Street Oakland, California

Well ID	Date	Pressure (psi)	Flow (cfm)
SP-3	4/2/96	10	1.5
	4/2/96	15	2.7
	4/2/96	20	5.0
SP-4	4/2/96	10	1.2
	4/2/96	15	2.4
	4/2/96	20	5.0
SP-5	4/2/96	10	1.0
	4/2/96	15	1.4
	4/2/96	20	5.0

Notes and Abbreviations:

psi = pounds per square inch
 cfm = cubic feet per minute

ATTACHMENT A

Analytic Results for Ground Water Sampling

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

07/29/96

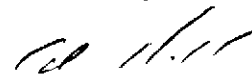
Dear John:

Enclosed are:

- 1). the results of 7 samples from your # 23-116; **Bo Gin** project.
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,



Edward Hamilton, Lab Director

Cambria Environmental Technology 1144 65th Street, Suite C Oakland, CA 94608	Client Project ID: # 23-116; Bo Gin	Date Sampled: 07/19/96
		Date Received: 07/22/96
	Client Contact: John Espinoza	Date Extracted: 07/22-07/24/96
	Client P.O:	Date Analyzed: 07/22-07/24/96

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g) ⁺	Benzene	Toluene	Ethylbenzene	Xylenes	% Rec. Surrogate
67106	MW-1	W	17,000,a	5200	1100	330	530	99
67107	MW-2	W	90,000,a	7300	14,000	1600	7300	101
67108	MW-3	W	ND	ND	ND	ND	ND	97
67109	MW-4	W	3300,a	520	39	67	60	102
67110	MW-5	W	ND	ND	ND	ND	ND	99
67111	MW-6	W	ND	ND	ND	ND	ND	96
67112	MW-7	W	ND	ND	ND	ND	ND	99
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, soil and sludge samples in mg/kg, and all TCLP extracts in mg/L

cluttered chromatogram; sample peak coelutes with surrogate peak

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment; j) no recognizable pattern.

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
 Tele: 510-798-1620 Fax 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 07/24/96-07/25/96

Matrix: Water

Analyte	Concentration (ug/L)			Amount Spiked	% Recovery		RPD
	Sample (#66917)	MS	MSD		MS	MSD	
TPH (gas)	0.0	95.0	101.2	100.0	95.0	101.2	6.3
Benzene	0.0	9.4	9.4	10.0	94.0	94.0	0.0
Toluene	0.0	9.1	9.2	10.0	91.0	92.0	1.1
Ethyl Benzene	0.0	9.0	9.1	10.0	90.0	91.0	1.1
Xylenes	0.0	27.2	27.9	30.0	90.7	93.0	2.5
TPH (diesel)	0	162	161	150	108	107	0.4
TRPH (oil & grease)	0	26000	27000	23700	110	114	3.8

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

6824 AC122

McCAMPBELL ANALYTICAL

110 2nd AVENUE, # D7

PACIFICCO, CA 94663

(610) 700-1620

FAX (610) 700-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME:

RUSH 24 HOUR 48 HOUR 5 DAY

REPORT TO:

BILL TO:

COMPANY: **CAMBRIA ENVIRONMENTAL**

1144 65TH ST.

OAKLAND CA 94608

TELEPHONE: 510-420-9700

FAX #: 510 420-9170

PROJECT NUMBER: 23-116

PROJECT NAME: **Bo Gin**

PROJECT LOCATION: **706 Harrison Oakland**

SAMPLER SIGNATURE: *[Signature]*

ANALYSIS REQUEST

UTILE

COMMENTS

SAMPLE ID	LOCATION	SAMPLING		# CONTAINERS	TYPE CONTAINERS	MATRIX					METHOD PRESERVED			STOX & TPH as Gasoline (402/802 & 8015)	TPH as Diesel (802)	Total Petroleum Oil & Grease (3300 CLP/3300 MFP)	Total Petroleum Hydrocarbons (418.0)	EPA 601/801	EPA 602/802	EPA 603/803	EPA 605/805 - PCBs Only	EPA 624/824/826	EPA 625/825	CERCLA - 17 Metals	EPA - Priority Pollutant Metals	LEAD (7240/723/2392/6000)	ORGANIC LEAD	AS	67106	67107	67108	67109	67110	67111	67112		
		DATE	TIME			WATER	SOIL	AIR	SLUDGE	OTHER	REL.	IND.	OTHER																								
+ MW-1		7-19		4	VGA	X					X			X																							
+ MW-2		7-19				X					X			X																							
+ MW-3		7-19				X					X			X																							
+ MW-4		7-19				X					X			X																							
+ MW-5		7-19				X					X			X																							
+2 MW-6		7-19		4	VGA	X					X			X																							
+ MW-7		7-19		4	VGA	X					X			X																							

RELINQUISHED BY: <i>[Signature]</i>	DATE: 7/19	TIME: 11:30	RECEIVED BY: <i>[Signature]</i>
RELINQUISHED BY: <i>[Signature]</i>	DATE: 7/20	TIME: 11:18	RECEIVED BY: <i>[Signature]</i>
RELINQUISHED BY: <i>[Signature]</i>	DATE: 7/20	TIME: 12:50	RECEIVED BY LABORATORY: <i>[Signature]</i>

REMARKS:

ICE/T GOOD CONDITION HEAD SPACE ABSENT

PRESERVATIVE APPROPRIATE CONTAINERS

NOAS | O&G | METALS | OTHER